CLAIMS (29491)

What is claimed is:

1. A hybrid speech encoder, comprising:

(a) a linear prediction, pitch and, voicing analyzer;

(b) a parametric encoder coupled to said analyzer; and

(c) a waveform encoder coupled to said analyzer;

(d) wherein said parametric encoder encodes strongly-voiced frames and said waveform encoder encodes both unvoiced and weakly-voiced frames including a pitch-prediction filter for weakly-voiced frames.

2. The encoder of claim 1, wherein:

(a) said waveform encoder includes a sparse codebook for weakly-voiced frames and a stochastic codebook for unvoiced frames.

3. A hybrid speech decoder, comprising:

(a) a linear prediction synthesizer;

(b) a parametric decoder coupled to said synthesizer; and

(c) a waveform decoder coupled to said synthesizer;

(d) wherein said parametric decoder decodes excitations for strongly-voiced frames and said waveform decoder decodes excitations for both unvoiced and weakly-voiced frames including a pitch predictor for weakly-voiced frames.

4. The decoder of claim 3, wherein:

(a) said waveform decoder includes a sparse codebook for weakly-voiced frames and a stochastic codebook for unvoiced frames